

**SPECIAL
OFFER!**

THE DISCIPLE DISC-MANAGER

**A SUITE OF INTERACTIVE PROGRAMS
TO MAKE THE MOST OF YOUR DISCIPLE**

GET TOTAL CONTROL OF YOUR DISCS

COMPRISES **3** PROGRAMS

SPECIAL INDUG PRICE

ONLY
£9.95
SAVE £5

The DISCIPLE Disc Manager gives you powerful disc handling and organising capabilities that would cost £100's on other machines!

● **THE CONFIGURER** This program actually names and numbers DISCIPLE discs to your requirements. Now disc identification is simplicity itself!

● **THE CATALOGUER** An amazing program that allows you to catalogue, search, update and display every program on every disc... NO typing in, simply insert all your discs, one at a time into drive 1 and the Cataloguer sorts, colates and displays all programs into numerical order, automatically!

● **THE AUTOLOADER** This program is the real workhorse of this suite of programs. You can automatically load, erase, copy, re-name all programs with 2 catalogue display options, and 2 disc facility. You can now **ERASE or RE-NAME up to 15 programs at one time.** (Ideal for multiple re-naming after a snap shot session). The Autoloader on every disc makes using the DISCIPLE so simple, so easy and such a pleasure to use, that you'll wonder how you could ever have Managed without it!

**COMPATIBLE
WITH THE NEW
★ PLUS D ★**

ONLY
AVAILABLE
FROM

**BETTER
BYTES**

BETTERBYTES, 10 SPITAL TERRACE, GOSFORTH, NEWCASTLE UPON TYNE NE3 1UT

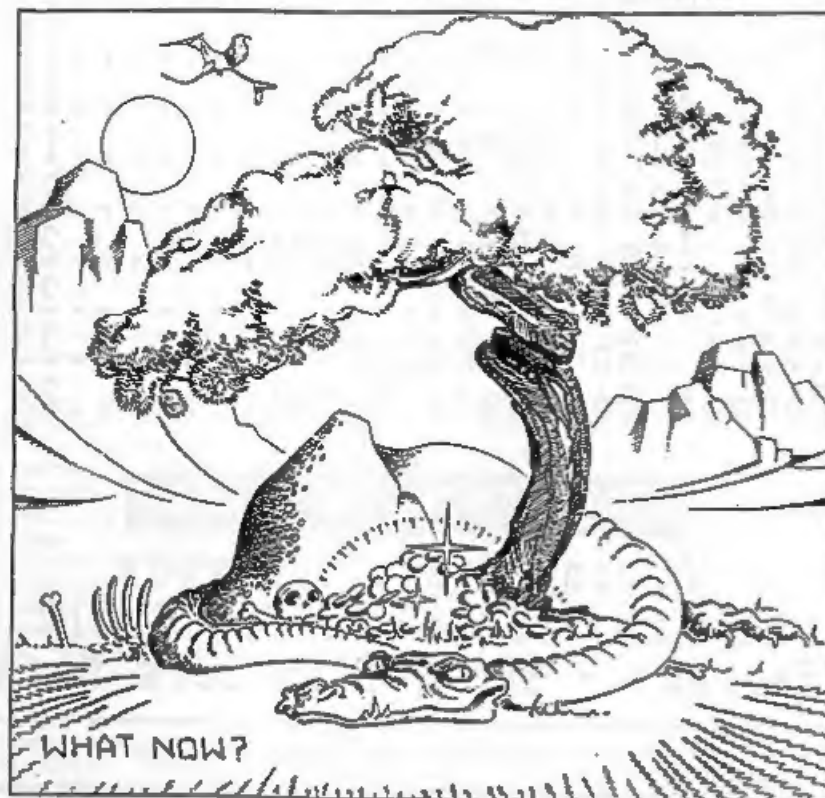
Mail Orders Welcome State if Disciple or Plus D and give details of drive type etc. Overseas orders add £1.50 p&p
(Please make cheques payable to D.L. HOOD)

Vol 2 - No 2.

September 1988.

FORMAT

THE MONTHLY MAGAZINE FOR
DISCIPLE & PLUS D USERS



*** NEW * STARTS THIS MONTH
THE ADVENTURE CORNER**

INDUG.

The Editor Speaks.....	3
News on 4.....	4
Your Letters.....	5
PCB Designer - A Review.....	6
Stringing It.....	9
The Hack Zone.....	13
Beta Basic.....	15
Adventure Corner.....	17
Small Ads.....	20
Back Issue Department.....	20
Sort That Cat.....	21
MIDI - An Introduction.....	23
Format Software Service.....	27

NEXT MONTH IN FORMAT

Adding Basic Commands
Command Codes - Jiffy Calls
Reviews - SAM - Plus Lots More

(C)Copyright 1988 INDUG. All Rights Reserved.

No part of this publication may be reproduced, in any form, without the written consent of the publisher. INDUG members may copy program material only for their own personal use.

FORMAT is published by INDUG, 34 Bourton Road, Gloucester, GL4 0LE, England. Telephone 0452-412572. DISCIPLE and PLUS D are trade marks of RILES GORDON TECHNOLOGY, Lakeside Technology Park, Phoenix Way, Swansea, South Wales, SA7 9EM. Telephone 0792-791100. The DISCIPLE is marketed by Rockfort Products, 81 Church Road, Hendon, London, W4 4DP.



As I write this (5th September) I have doubts that anyone will get to read it in the near future. The postal strike affecting most of the UK is already taking its toll on my mail-bag, I don't know when I've had less coming in. Still all I can do is plod on and get this issue to the printers and hope that the postal-workers sort themselves out before FORMAT is due to be sent to members.

Last month's issue has produced an avalanche of praise and congratulations from members. THANK YOU, I can't reply to all your letters personally, but they are very much appreciated.

Membership renewals have been flooding in over the past two months, currently over 70% have renewed for a second year and they're still coming in. I have spoken to several people who have not renewed and the most common reason given is moving over (I can't call it upgrading) to a PC or Atari ST. It's interesting to note that very few are selling the Spectrum set-up (they're just spending all their money on the new computer) so we may well see them back when they get disillusioned with expensive software; difficult operating systems and the rest.

Many new members send for a set of back issues. However more and more tend to buy just the more recent issues and as a result it has become a nightmare trying to arrange reprints of early issues. As relatively small quantities (usually 50 at a time) are printed, and of course I run out of each issue at a different time, it's getting too expensive to continue. From this month issues 1-6 have been dropped from the list and I'm sorry to say it's also been necessary to increase the price of other issues by 5p to allow for new printing prices. I must also warn that issues 7-12 will probably go out of print around Christmas. But new members need not despair, in the new year I intend to bring out a compilation of the best of the early issues so you won't miss too much.

This month sees several new articles and writers. Ray Elder, a former editor of EX Computing, starts a new series on MIDI and Computer Music. Paul Rigby starts a new Adventure column, something I've been after for a long time. Dr Andy Wright starts a series on BETA BASIC, remember that the Basic for the new SAM computer is going to be a development of Beta Basic. So, if you want to get ahead of the rest, get yourself a copy of Beta Basic and learn some new programming habits.

See you next month.

Bob Branchley. Editor.

NEWS ON 4

TASWORD 128 & +2

At last, the news many of you have been waiting for, the launch of TASCOS. From the 'Format Software Service' (see page 27) the tape has TASCOS 128 on one side and TASCOS+2 on the other. Designed, as the names imply, to convert Tasword 128 and Tasword +2, the tape cost £3.95 (\$4.95 overseas) including p&p.

The programs are very simple to use and require no programming experience. Just load the relevant converter, play your original Tasword tape, and Hey Presto - a full disc version of your favourite wordprocessor. ALL features of your original Tasword 128/+2 are retained, except the ability to use Tasprint (which won't work with DISCIPLE or PLUS D anyway). The converted Tasword uses OPENTYPE files so files can be passed to and from other programs. You can still load and save to tape. Single or twin drive are supported with a catalogue of text file when required.

WHATS HAPPENING TO PCW

Anyone out there know what's going on at Popular Computing Weekly? Its been three weeks since the last issue appeared on the shelves in Gloucester and I've heard a similar story from some other areas. Are they having distribution problems? or are they just not printing enough?

YOUR COMPUTER FOR SALE

Your Computer magazine is up for sale. Focus Magazines, who own Your Computer, are looking for a buyer for the title. Once the most highly circulated and read magazine in the home computer field it has gone down-hill over the last two years or so. It has been described by many people as 'a magazine without a target market'. Recent issues (which suddenly became bi-monthly) have suffered poor distribution, poor layout and printing, and a total lack of real content. What will happen to YC now? We can but wait and see.

NORBRECK RALLY

The Northern Amateur Radio Societies Association have announced the date and venue for their new year show which was formally held at the old Belle Vue in Manchester. Described as 'The North's Largest Show For All Enthusiasts Of Amateur Radio, Electronics And Computing' it will be held at the Norbreck Castle Hotel Exhibition Center in Blackpool on Sunday January 29th 1989. Doors open at 11am.

Further details from the exhibition manager:- Peter Denton (G6CGF), 42 Trafalgar Road, Wallasey, Merseyside, L44 0EB.



YOUR LETTERS



Dear Editor,

I am writing to ask if it would be possible to do a series on the CODE MACHINE editor/assembler, similar to the one on EXPANDING GENS. I am having problems with the program as neither the microdrive commands nor the printer options will work with my PLUS D.

Yours Sincerely, Darrin Talbot.

P.S. thanks for printing my tip in issue #11.

The CODE MACHINE is the same as the Picturesque editor/assembler. I have no experience of this one, but if anyone out there wants to have a go at an article I will give them what help I can. Ed.

Dear Editor,

May I offer my congratulations to yourself and all contributors on the 1st Anniversary of INDUG and FORMAT. I have been delighted with the whole range of friendly help and advice available to users of the amazing DISCIPLE interface, which fully warrants the claims made for its capabilities by its innovators.

FORMAT has now replaced for me the magazines aimed at Spectrum owners as they have now degenerated to cater almost solely for the games users, and appear to offer little in the way of basic help for the many non-games Spectrum owners. Needless to say I have cancelled my subscription to such magazines, and happily rely on good old FORMAT whose arrival each month is eagerly awaited.

Yours Sincerely, Ray Gaunt.

Dear Editor,

I think my membership may be due for renewal but I'm not sure. Could you let me know as I don't want to miss an issue.

Yours Sincerely, John Masters.

I've had several letters like yours John and I can put your mind at rest. In the issue before the last one you are due to receive you will automatically get a renewal notice so you will have plenty of warning. You can also tell when your last issue is due from the label on each month's envelope, the top line is your membership number, the month and year of your last issue (i.e. 1088 for October'88) and a sort code that I use to help printing. Ed.

Letters printed may sometimes be edited for length or clarity.

Your letters are needed for this page. You can write on any subject you think may be of interest to other readers. Keep them short and to the point. Go on, get writing..

PCB DESIGNER REVIEWED

By: Dick Guy.

Very occasionally a SPECTRUM program appears on the market which, just a few years ago, would have been called impossible. Such a program must be 'PCB Designer' from KEMSOFT, it is to my mind the ultimate utility program for my dear old Speccy, one I have wanted for years.

Versions of the program are available to work with DISCIPLE & PLUS D; Opus Discovery, Microdrive or tape. For the DISCIPLE the suite of 8 programs is provided on cassette. This allows all disc variations to be accommodated in a straight forward manner. Following the instructions in the comprehensive manual/tutorial allows the program to be readily copied to your disc and takes about 10 minutes to do.

The manual/tutorial is excellent, 32 pages in all and very well laid out. Most of these pages are devoted to the tutorial which shows up the designers background as a Lecturer and he even suggests when to have a coffee break.

You are taken step by step through a simple board design which demonstrates all the PCB DESIGNER's options which include Block Move : Rotate : Mirror : Fill : Copy: Unfill : Undo : 15 track widths : 16 transistor/ic/corner pads : 16 pad sizes etc, etc. Additionally you may generate upto 10 icons of your own which can be your personal motif : switch mountings etc.

The maximum size of board which the program can generate is approx 6.5" x 4.5". I do not consider this a major limitation as it is many years since I have made one larger. On screen the design is made up of 4 full-screen 'pages' which can be SAVED individually or as a complete layout. Access to each page is by using 8 'cursor' keys, these being number keys 1 to 8. Keys 5-8 give the standard movement and keys 1-4 give diagonal movement. Some may feel this approach to be cumbersome but it is easily mastered and saves memory for the design.

The program runs in two main modes:-

a, CURSOR and b, PLOT.

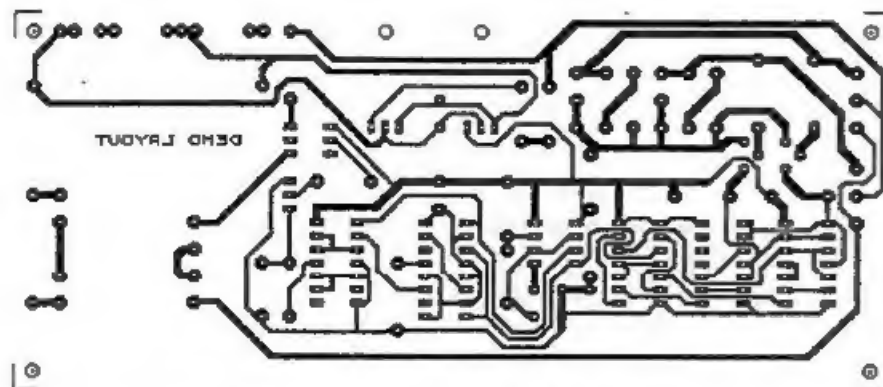
Cursor mode is the start-off program and is used to design the layout and place pads. This must be done first. Plot mode is then used to interconnect the pads etc, using a 'cursor' pen via keys 1-8. Pen speed and width are all variable to suit individual requirements. Accurate results are suprisingly easy thanks to a switchable 0.1 inch grid overlay and the results are very satisfying. With practice, half an hour should be all thats needed to produce a good layout. No more graph paper and

transfer rubbing to produce a design and any mistake is easily remedied.

The manual also covers basic pcb production for those of you who have never done it. More detailed information is already available in the hobby technical press i.e. ELECTOR, ETI or PRACTICAL ELECTRONICS.

The manual points out some limitations of the program. The major being double sided boards. Due to the Speccys method of colour control double sided boards may not be done directly. Do not despair however as the manual gives guidance on how they may produced.

From within the main program you can PREVIEW the whole layout on screen or get a QUICK printout on the printer. Both enable you to confirm that things are right before saving your work.



DEMO LAYOUT (Supplied with the program)

Note that this has been reduced by 50% to fit into FORMAT

When your board has been designed, checked and saved you then load in the separate PRINTER program. A lot of thought has gone into this with a choice of 4 different printouts, QUICK (draft); NORMAL, DENSE and 2X. Dense printing also gives you the further choice of how many times (2 to 4) you want the printer head to pass over the paper, very useful (as the manual points out) to allow for new/old ribbons.

Prospective buyers should be aware that the current printer driver routine resident in this package is designed to suit one range of printers only. Your printer MUST be of the EPSON LX/RX/FX 80 range OR A DIRECT EQUIVALENT supporting ESC * and ESC 3 (n/216) Epson control codes. For accurate results the print head pin spacing must also be identical to the LX/RX/FX 80 range. Regrettably the company are currently reluctant to devote too much time and effort to a rewrite of the drivers for other printers, due to the enormous range available, and printer manufacturers reluctance to provide data. (Apparently they don't believe this program can work).

I do have a couple of very minor criticisms with the package however, other than its obvious printer limitations. The main one is the slip of paper provided as a reminder of the key functions. Although I applaud the reason, I feel this could be improved on by either having it printed on the cover of the manual or, better still, having a HELP page selectable from the main menu. This could always be dumped to printer if you wanted. The second criticism is the key selections for different functions, unless you use a 48k Spectrum there appears to be no relation between function and key letter. i.e. Text mode is entered by selecting 'P'. This is not a major deficiency as practice makes perfect.

In conclusion this program at £19.95 can only be considered as excellent value for money. A little thought will show that it can be used for other than pcb design and I will be making use of the icons to do circuit designs. I think that one of the first designs that I shall be making will be a dedicated keyboard to be used with this program. Who knows what the future could hold for FORMAT? Perhaps we shall see a hardware page with pcb designs. Just think you could now get a pcb layout for your project-on disc.

KEMSOFT,
The Woodlands,
Kempsey,
Worce,
WR5 3NB.

Tel: 0905 821088 - Evenings Only.

ADDRESS AND DISC MANAGER

For PLUS D and DISCIPLE (version 3 onwards)

THREE programs, on one 3½" disc, handle all your Address and Disc organisation at a truly realistic costing.

007 MENU. With the enormous number of K per disc, this program is essential to keep a track of which disc your program(s) is on. Simply insert your disc(s) then press a key and a Full CAT is held in a record (Upto 2200 Records). Can SEARCH for any program and INSTANTLY tell you which disc its on (and even LOAD it).

007 SUPERFILE. Holds upto 500 name/address records and finds any one INSTANTLY. Super Fast SEARCH, ALPHA SORTs, etc. Prints as FILES or LABELS by SEARCH, Sort or String.

007 LISTFILE. Holds 1,000 single line records. Fast SEARCH, SORT, ALPHA SORT, RENUMBER. Can print all or selected records.

ALL programs can Print Out to ANY type of printer.

All three programs on one 3½" disc.... **£9.95**

ZX-GUARANTEED (G.A.Bobker) Dept: INDUG. 29 Chadderton Drive, Unsworth, Bury, Lancs, BL9 8NL. Tel: 061-766 5712 (Do NOT phone if STAR TREK is on TV)

Stringing It

or GETTING MORE INTO A S.

By: Clyde Bish.

The riddle, "How long is a piece of string?" is especially valid in the world of micros. The answer, invariable, is 2 - Too long! There is little to match the sheer horror of realising that your super-descriptive-multi-screen-graphic-adventure, already nine-tenths typed in is not going to fit! The solution to your impending breakdown is to squeeze the text. (We'll do the pictures later).

The shortest way to get a message onto the screen is to simply PRINT it. For example:-

```
10 PRINT "You are in a passage"
```

this takes up 28 bytes (memory spaces) in the program area (called PROG) and nothing in the variables area (VARS). But it will take this much space each time you must use it. If you want to use a message more than once, do it this way. NEW the machine, then type in:-

```
LET a$="You are in a passage"
```

without a line number (i.e. in command mode) and press ENTER. Now LIST and you'll get nothing. Not surprising, you have no program, but your message is there. Type in:-

```
10 PRINT a$
```

and press ENTER. Now Type GOTO 10 and press ENTER again. Your message appears on screen! Magic? Not a bit of it. Your message is held in VARS only, and this is where the computer looks to find what 'a\$' is to PRINT it. It takes up 23 bytes in VARS and 8 in PROG, a total of 31 bytes. Although this is more than the first method you only use 8 bytes each time you need to PRINT it, not 28; a saving of 20 bytes each time!

If you had used RUN instead of GOTO you would have seen the error message "Variable not found" because RUN clears the variables area. With this method you must GOTO. (This means that programs which hold variables in VARS only must be SAVED using LINE so that they autostart).

Now I've reminded you how to use VARS only lets have a look at other ways of byte saving. (If you want more information on VARS read that mysterious Chapter 24 in your manual).

The PRINT comma (CHR\$ 6), attribute control characters (CHR\$ 16 to 21), and the backspace control character (CHR\$ 8) can also be included in strings. If a message to screen is more than 32 characters long you have to split it at a convenient point, and continue on the next line using either "", which uses up three bytes, or by filling out the row with spaces - another byte

waster. You can often save bytes by using the mysterious CHR\$ 6, the PRINT comma, including this is a string will tell the machine to continue PRINTing at the next field. If you are already more than half way across the screen this will mean "move down to the next row".

Sounds good, but how do you get these characters into a line? Try this sequence (and don't worry if strange things happen). Type in:-

```
PRINT "A line of printing"
```

Now go into B mode (Caps & Symbol Shift) and, still holding down Caps Shift, press 6. The cursor will go a sickly combination of yellow on white. You will have added two control characters (16 & 6). You want the 6 (to give the PRINT comma) but not the 16 so press delete (Caps Shift 0) to remove the CHR\$ 16. The cursor jumps on half a row! Now finish off your message with:-

```
Another line below"
```

Don't press ENTER yet. I want to prove that the gap between "printing" and "Another" really does exist. Cursor back (Caps shift 5) and watch the L. See it jump the space! You can see there's a space there. I can see there's a space there. But the computer can't, so it doesn't count it. Press ENTER and you will have two lines of printing with no wasted spaces.

You can use CHR\$ 6 in other places too. In fact, anywhere you would normally use a "" or "," in a PRINT statement. You can use extra PRINT commas before, within or after lines of printing to give extra blank lines (but there's a better way I'll tell you about later). Incidentally, if you are less than half way across a row you'll need to use two PRINT commas following each other - there isn't a PRINT apostrophe!.

You can use a similar method to include attribute control characters in PRINT statements. Take the line:-

```
10 PRINT INK 1; PAPER 6; BRIGHT 1; FLASH 1;"TEST"
```

This would take up 48 bytes. You can save 31 of these (Yes, 31!) if you use control characters. (See pages 114 & 115 of your manual). This is how you would type in the line above. (NOTE: the / signs are only separators - don't type them in):-

```
PRINT (E mode,Caps Shift)1 / (E mode)6 / (E mode)9 /  
(E mode,Caps Shift) 9 / "TEST"
```

When you ENTER this the word TEST will be flashing, bright, blue on yellow. If you had entered it as a program line, so would the end quotes and anything following when listed! This won't affect the running of the program one bit, but if it irritates you can switch back to normal by ending the line with:-

```
(E mode)8 / (E mode,Caps Shift)8 / (E mode)7 / (E mode,Caps  
Shift)0
```

but it will cost you 8 bytes. (You won't run into the

technicoloured listing problem, of course, if you're holding the message in VARS only).

You can use CHR\$ 8 (cursor left) with CHR\$ 21 (OVER) to PRINT one character on top of another. You could use this to underline a title. Try this:-

```
LET a$="A"+CHR$ 8+CHR$ 21+"_":PRINT a$
```

and you'll get a underlined A on screen.

Another way of saving bytes is to make use of the tokens (keywords etc.) that Uncle Clive has given us. For example, the line:-

```
20 PRINT "NEW DATA"
```

that you may want to use in a file handling program takes up 16 bytes, but if you use the tokens NEW and DATA from the keyboard this is reduced to only 10 bytes because tokens, whatever their length, only take up one byte each.

However, if you've rushed to your machine and tried to type in this line using the tokens you will have had problems. After the " sign the cursor is in L mode which will give you the letter a, not the keyword NEW. What you have to do is to trick the machine into giving you a K cursor. This is how you do it. Type in the line as:-

```
20 PRINT "THEN NEW THEN DATA"
```

then cursor left and delete both the THENs. Now you have what you want. If you want some light relief from serious programming it can be quite entertaining to try to see how long a sentence you make using just tokens and punctuations. Here's a short, silly example. I'm sure you would do better!

```
RUN VAL, COS LEN FLASH!
```

Now let's extend the idea of using strings. What about a message such as "You are in a passage leading" followed by north, south, east, west, up or down? There's no need for six separate messages. Simply set up:-

```
LET a$ 1 "You are in a passage leading "
```

(don't forget the space after "leading") then for example use:-

```
10 PRINT a$;"north"
```

Text is easier to read if the messages are spaced out with blank lines between. You can use PRINT commas for this, but for whole lines, you can include in your string the ENTER character (CHR\$ 13). Like this:-

```
LET a$ = CHR$ 13 + "What will you do?" + CHR$ 13
```

Now PRINT "test 1";a\$;"test 2" and there will be a blank row either side of your message.

With graphics adventures, a communication window is usually used below the illustration. This means that you would have to

use a line such as:-

```
10 PRINT AT 20,4;"You are in a tunnel"
```

Obviously using a declared string for the message would save some space, but there is an even better way. CHR\$ 22 is the AT control character and can be incorporated into strings in VARS just like any other control character. Here is the line which will produce the same result as the one above:-

```
LET a$=CHR$ 22+CHR$ 20+CHR$ 4+" You are in a tunnel"
```

If you now PRINT a\$ your message will appear at row 20, starting at column 4.

If you have a number of messages to PRINT at the same position you can set just the AT position as a string variable.

```
LET p$=CHR$ 22+CHR$ 20+CHR$ 4
```

then use

```
10 PRINT p$;"your message"
```

when you need it. (Obviously the message could also be a variable as explained earlier. If you wanted all your messages at the position to have certain attributes these could be added to p\$.

Having printed your message below an illustration you will also need to remove it without disturbing the picture. The usual way of doing this is:-

```
10 PRINT AT 20,0;" (32 spaces) "
```

These blanks are very wasteful of space and can be replaced by:-

```
10 PRINT AT 20,0,,
```

or even better

```
LET d$=CHR$ 22+CHR$ 20+CHR$ 0+" (2 print commas) "
```

then PRINT d\$ to clear the line. You could use a succession of PRINT commas to clear multiple lines but you could also use INPUT AT. The number of rows cleared is counted up from the bottom, and the current PRINT position must be above the area to be cleared or the screen will scroll. For example, to clear the bottom 4 rows:-

```
10 PRINT AT 17,0;: INPUT AT 4,0;
```

Incidentally, if you have had problems clearing a PRINT #0;"message" simply use INPUT; I

All that I've said for CHR\$ 22 also applies to CHR\$23 (TAB) but you must have a blank space at the start of your message. (See p.80 in your manual). Also remember that TAB affects the whole row so including attributes can produce strange results!

Next Month, some more memory saving ideas for your programs.

HACK-ZONE

By: Hugh J. McLenaghan.

Hexloader Time!

This month I will be dealing with a Hexloader! Oh no not another Hexloader I hear you all cry, but this one's different. My hexloader contains an advanced automatic checksum routine.

Each line of hex is 17 characters long instead of the usual 16 characters, this is because the last character is the checksum digit. First I will list the program I will then explain how it works and show you some examples.

Listing:-

```
10 REM Hexloader.
20 REM Written by
30 REM Hugh J. McLenaghan
40 REM On the 20th July 1988.
50 REM
60 DEF FN H(H$)=(CODE H$(1)-48-(7 AND H$(1)>"9"))*16+CODE H$(2)-
48-(7 AND H$(2)>"9")
70 INPUT "Start Address ?";START
80 RANDOMIZE START: CLEAR START-1
90 LET A=10: LET B=11: LET C=12: LET D=13: LET E=14: LET F=15: L
ET START=PEEK 23670+256*PEEK 23671
100 INPUT "Finish Address ";FINISH
110 IF FINISH<START THEN PRINT "START>FINISH": GOTO 100
120 FOR N=START TO FINISH STEP 8
130 PRINT N;";";
140 POKE 23658,8: INPUT "Hex=";LINE H$
150 IF LEN H$<>17 THEN GOTO 140
160 PRINT H$
170 LET TOTAL=0: LET X=1: FOR M=17 TO 1 STEP -1
180 LET TOTAL=TOTAL+VAL H$(M)*X: LET X=X+1
190 NEXT M
200 IF TOTAL/16<>INT (TOTAL/16) THEN PRINT "Checksum Error Re
-enter.": GOTO 130
210 FOR M=0 TO 7: POKE N+M, FN H(H$): LET H$=H$(3 TO ): NEXT M
220 NEXT N
230 PRINT "Complete."
```

Line 60 :- This line converts a pair of hex digits to it's decimal equivalent.

Line 70 :- Input START address.

Line 80 :- Stores the value of START and sets RAMTOP.

Line 90 :- Sets up variables and restores the value of START.

Line 100 :- Input FINISH address.

Line 110 :- Checks that START is less than FINISH.

Line 120 :- Sets up loop to load blocks of 8 bytes.

BETA BASIC

By: ANDY WRIGHT.

Line 140 :- Turns on caps lock, then inputs line of hex.
 Line 150 :- Makes sure that the length of the hex string is 17 chars long.
 Line 170 :- Sets up variables and loop for checking routine.
 Line 180 :- Multiplies X by the character value and adds it to the TOTAL.
 Line 200 :- This line checks the checksum.
 Line 210 :- Actually pokes the values into memory.

Here is an example hex line:- CD21037692FE0320B

You will notice that the length is 17 characters long. Character position 17 is the B and character position 1 is the C. We will now follow the steps of the program:-

PROGRAM

```
TOTAL=0 : X=1
FOR M=17 TO 1 STEP -1
TOTAL=TOTAL + VAL HS(M)*X 1e
TOTAL=TOTAL+11*M
TOTAL=TOTAL+0*2
TOTAL=TOTAL+2*3
TOTAL=TOTAL+3*4
TOTAL=TOTAL+0*5
TOTAL=TOTAL+14*6
TOTAL=TOTAL+15*7
TOTAL=TOTAL+2*8
```

This continues until M=1 :-

TOTAL=TOTAL+17*12

And when the program divides the TOTAL by 16 it gets a whole number therefore the checksum is correct.

I hope that this has made it all easier to understand. If not then write to me and I will explain it more and give more examples.

Information!

Did you know that in version 3 and above of the DISCIPLE software that they have added an autorun option to CODE files? If not read on.

When M.G.T. wrote the Version 3 DOS manual they left out the new feature of autorun machine-code files. This new feature was pointed out by Bob in Format issue 1, but I am repeating this for anyone who did not get issue 1.

When you save a block of machine-code to disc you do the following:-

SAVE d*"name" CODE #start,length

Turn to page 26.

This is the first of what I hope will be a series of articles on programming using BETA BASIC, the advanced Basic from Betasoft (reviewed in Format issue 9).

The program below is a Beta Basic listing for a puzzle devised some years ago by a David Nowotnik. You are presented with a pattern of four coloured squares which is then scrambled. The object is to return the puzzle to the starting position by sliding sections of the screen up and down or left and right, using the number keys.

To those of you not familiar with Beta Basic, the most striking difference from standard Spectrum Basic is probably the format of the listing, which shows the effect of the command LIST FORMAT 2. Procedures, FOR-NEXT loops, DO-loops and other structures are indented, and each statement appears on a separate line. This makes programs much easier to read.

Another thing you will notice is the use of some new commands in the program. For example, the DO at line 50 and the LOOP at line 140 form an endless loop which controls the game. This is fairly straightforward - it does the same as a GOTO 50 at line 140 would. Below the main part of the program are two defined procedures - DEF PROCs. At the simplest level you could think of them as named subroutines, but Beta Basic is very flexible in the way it lets you pass values to procedures, and this effectively means that you can define new commands. The procedure MAKEMOVE, for example, moves part of the puzzle in a particular direction, according to the number you supply. If you type MAKEMOVE 5, the top half of the puzzle moves left, because at line 220, M equals 5, and the ON command selects the fifth following statement for execution. This makes the desired part of the screen move. (ROLL is as complicated as Beta Basic's commands get; quite a few numbers are needed to define direction, number of pixels, and area of screen to move).

The procedure SHUFFLE uses the MAKEMOVE procedure 8 times, with a random direction, to scramble the puzzle. SHUFFLE does its job at line 90, after you have had a brief look at the original setup. The program then enters a loop, starting with DO and ending with LOOP UNTIL A=0; the program will go round this loop until the variable A is 0 (easy, isn't it?). Where does A get its value? It comes from the keyboard - GET A waits for a key to be pressed, and then assigns its numerical value to A. So if you press keys 1 to 8, MAKEMOVE makes one of the eight possible moves (it ignores other values of A) but if you press 0, the loop at lines 100-130 is left behind, and the outer loop at lines 50-140 is entered. This restarts the game.

THE NOWOTNIK PUZZLE.

```

10 BRIGHT 1
   BORDER 1
   PAPER 1
   INK 7
   CLS
   LET a$=""
20 PRINT AT 1,10;"<5";AT 1,20;"6>";
   PRINT AT 20,10;"<7";AT 20,20;"8>";
30 PRINT AT 5,6;"^";AT 6,6;"1";
   PRINT AT 5,25;"^";AT 6,25;"3";
40 PRINT AT 15,6;"2";AT 15,25;"4";
   PRINT AT 16,6;"v";AT 16,25;"v";
50 DO
60   FOR n=1 TO 8
       PRINT AT 2+n,8; PAPER 2;a$; PAPER 6;a$;
       PRINT AT 10+n,8; PAPER 4;a$; PAPER 5;a$
       NEXT n
70   PLOT 59,20
       DRAW 0,136
       DRAW 136,0
       DRAW 0,-136
       DRAW -136,0
80   PAUSE 50
90   shuffle
100  DO
110   GET a
120   makemove a
130   LOOP UNTIL a=0
140  LOOP

200 DEF PROC makemove m
210   FOR t=1 TO 4
220     ON m
         ROLL 3,8;64,144;8,128
         ROLL 2,8;64,152;8,128
         ROLL 3,8;128,144;8,128
         ROLL 2,8;128,152;8,128
         ROLL 1,8;64,144;16,64
         ROLL 4,8;64,144;16,64
         ROLL 1,8;64,80;16,64
         ROLL 1,8;64,80;16,64
230   NEXT t
240 END PROC

250 DEF PROC shuffle
   FOR n=1 TO 8
       makemove RND*7+1
       PAUSE 10
   NEXT n
END PROC

```

BETA BASIC is available in 48k and 128k versions from:-

BETA SOFT. 24, Wynche Avenue, King's Heath, Birmingham, B14 6LQ.
Price £15.95 ~ Please State DISCIPLE / PLUS D when ordering

ADVENTURE CORNER

By: Paul Rigby.

When an adventure column arrives in a magazine such as *FORMAT* all sorts of possibilities arise. Because this adventure column aims to be modelled around, and by, its readers. It is up to you, therefore, to send in your views, suggestions, likes and dislikes. I need your feedback. The success of this adventure column depends on it!

Plans for the series include: how to actually play adventures. From the basics of adventure playing to all of those nasty little tricks adventure authors love to include within their games; discussions on adventure history; adventure authors; adventure psychology (!); puzzles in adventures; interactive fiction; artificial intelligence; graphics; adventure maps and mapping; and adventure utilities. I will also be investigating how an adventure is actually produced by concentrating on one aspect of an adventure and basically taking it apart to see how it ticks. But that is not all. I hope to introduce one or two surprises in the coming months - just to keep you on your toes! I also intend to have a mix of subjects each month with no real pattern or regular features. This is a deliberate move to keep the column fresh and to prevent any form of stagnation which has seemed to have befallen other adventure columns in other magazines. However, that does not mean that an ongoing series will be forgotten about. It just may not appear every month. If you have any ideas or information relevant to the above topics or any other topic not covered in the above then please write to me care of *FORMAT*.

When the fearless adventurer, disc or cassette in hand, first approaches his or her beloved Spectrum and loads up the game a new world opens up. No other form of computer entertainment is quite like it. The player's imagination projects images to the brain through the stimulus of the adventure prose. Immediately the player is transported to another land, another time and, invariably, adopts a totally different persona. The adventure game enables the player to, literally, play out his or her fantasies. Fantasies constricted by definite rules, it is true, but the atmosphere generated by the adventure helps to mask those constrictions and turn them into the rules of everyday living. The adventure not only stretches the imagination but demands, from the player, a certain amount of problem-solving. This aspect of adventuring has been described, by various people, as cold educational mental arithmetic.

However, when one thinks carefully about this point you realise that day-to-day living presents us with many similar, if rather less elaborate, problems that adventures pose. However, the ideal of the perfect adventuring experience has been

difficult to achieve. Many adventure authors have failed miserably. Many have had valiant attempts and while they have not achieved that immense goal of perfection they have produced a standard of entertainment which is certainly an improvement over the earlier attempts of others and has given adventure players that certain sense of satisfaction and maybe even sadness to have had to, finally, finish the adventure.

A good adventure can bring out in us a range of diverse emotions such as satisfaction, frustration, compassion and happiness. The author is, most of the time, aware of this and so must tread a fine line to keep a balance otherwise the plot becomes unrealistic the puzzles become insignificant or easy and the atmosphere will dissipate causing the player to lose interest. I can say that I have played some (too many!) games which have done this. One old adventure, produced by Virgin comes to mind, called Ghost Town. The graphics took the form of an on-screen map. Empty and uninspiring line drawings. This was a different approach to the usual scenic graphics, a bold move perhaps, and one which may have worked if the adventure had contained some atmosphere and a more forgiving parser. After struggling to solve any of the problems set, being exasperated with the total lack of any locational description and response to the "examine" and "search" commands, the illogicality of the game brought me to a halt. I began to suspect that the adventure was called "Ghost Town" for rather more reasons than was originally intended. The whole adventure was, basically, empty!

Which brings us to "atmosphere". Without it the game becomes a cardboard cut-out. Like the scenery in an old Hollywood movie. One push and the whole illusion collapses. The patience that the adventure author needs to build up a realistic atmosphere can often be gauged by the games he produces. Many of the older Quilled games, and even some of the latest, adventures were content to tell us that;

" You can see a chair."

Accurate? Maybe. Atmospheric? I think not. More and more adventure authors would embellish that, rather terse description, with something approaching;

" In the centre of the room a chair stands alone. It is plainly an antique, Chippendale, if your memory serves you correct. The seat is in a poor state of disrepair while the legs of the chair have seen better, more peaceful days. How strange, then, that the beauty and grace still remain "

It all comes down to the patience of the author. If the author " cannot be bothered " then maybe he or she should write a program to make the computer able to make the tea or somesuch. As soon as the author starts to treat the adventure as a programming exercise the adventure, as a piece of entertainment software, dies.

Many players, those fortunate enough to have access to adventures by Infocom for example, say that graphics actually

degrade an adventure's atmosphere. They say that there is no graphical substitute for the human imagination. I am inclined to agree with this view, especially talking as a Spectrum adventure player. Many of us have 48K machines. I am fortunate to have a 128K machine. But even so when I see a poor graphic I wonder how much the descriptions could have been improved if the graphic was left out. Taking up what relatively little memory Spectrum owners have. However, even 128K pales into insignificance when compared to a Magnetic Scrolls adventure on a ST, Amiga or PC, with upwards of 512K of RAM. Here, the graphical power can actually contribute towards the atmosphere or at least act as a supporting feature. However, while I am inclined to agree I do not totally agree that all adventures should be text only. For one thing it is nice to have the choice and the variety between text and graphical games. If the graphic artist is good and can convey the correct mood of the adventure, as is possible with many of the excellent utilities available today, it can be exciting waiting to see what the next graphic will be like. The imagination will cope, I believe, with a good graphic. Filling in all of the missing pieces the player already holds within his mental picture of the scene or person.

Anyway, I think I will leave you to mull over those thoughts at your leisure. Please write in to **FORMAT** to express your opinions on all of the subjects listed or discussed above - or any other subject to do with adventures. I would like to hear from you. By-the-way, if you are a beginner and were somewhat confused to read about references concerning the "Quill" or "parser", never fear because I will explain all in the fullness of time.

Remember stick with **FORMAT** and become a Master Adventurer!

Bradway Software

Lin-O-Type

Add style to your written word; print out any ASCII wordprocessor file in high density NLQ in a choice of 25 fonts. Turn your Spectrum into an electronic typewriter, superb for addressing envelopes, filling in forms or writing short notes.

- Full on screen WYSIWYG line editor.
- Library of 25 fonts including foreign alphabets.
- Up to 5 fonts may be mixed on each line.
- Fast, compiled editor to modify & create new fonts.
- Single or double width characters and underlining.
- True proportional spacing.
- Load files from any storage device; mdw, disc, Wala.
- Print text as found or edit en route to printer.
- Double density print gives NLQ in most fonts.
- Printing is multi-tasked with keyboard use.
- Optional hexadecimal dump from code files.
- Price £9.00 (max) £18.00 (mdw, disc).

Lin-O-Type requires an Epson compatible printer. All Bradway Software programs drive almost any printer interface (including Disciple & Plus D) and are available on 5.25" or 3.5" disc for Discworld or Disciple. Post & Packing: UK & Europe included, please add £1.50 per program world-wide airmail. Payment by cheque, PO, GIRO 65 475 0901, ACCESS. Send for our full catalogue of utility programs for the Spectrum.

WordFinder

At last, help for all you crossword and word game enthusiasts! WordFinder gives you on line access to a large vocabulary to aid those jaded memory cells.

- 19,000 unique words.
- 5,000 proper names.
- Word lengths of 3-12 characters.
- Search by word skeleton e.g. -g-y.
- Simple retrieval of plurals, adjectives & adverbs.
- Superb anagrammer; input more letters than target
- or less letters than target (for Scrabble cheats!)
- Uses Spectrum+28 RAM disc for superfast access.
- Price £9.50 (max) £10.50 (disc).

'Hillsett', Upper Padley, Grindleford, Sheffield, S30 1JA. phone (0433) 30799.

SMALL ADS. SMALL ADS.

FRENCH HELP If you have worries about loss of access to stored file on 3 1/2" discs if your equipment fails, and if you live fairly close, please contact G.Stevens, 4 Rue Fabre D'Eglantine, 75012, Paris, France.

EXCHANGE my 5.25" 40/80 track disc drive for 3.5" MGT drive. Also 20 5.25" discs and PLUS D and VTX5000 Modem for anything interesting. Tel Gordon Brignall on Farnborough (0276) 32490.

FOR SALE 1 - DISCIPLE v3 DOS; 2 - DISCIPLE v2 DOS; 3 - Opus SS/DD 40 track 5.25" disc drive + PSU; 4 - Alphacom 32 printer. Offers please to J.Hall, 8 Woodland Drive, Trinant, Crumlin, Gwent, NP1 4LP. Phone 0495-214731.

YOUR ADVERT

Buying, Selling, Pen Friends, Clubs, etc.

This space is reserved for you. Any **PRIVATE** advert, up to 30 words (subject to acceptance), will be printed **FREE** in the next available issue. Any software sold must be original copies, with full instructions and in working order. The publishers will not be held, in any way, responsible for adverts in this column.

* - * - * - *

BACK ISSUES

For members who have missed past issues of **FORMAT** (or perhaps worn theirs out) we run a back-issue service.

The cost is 70p per issue (90p overseas) which includes postage. Your copies will be sent out as soon as possible but, in order to keep printing costs down, it may take up to 28 days for us to dispatch. Make cheques (drawn on UK bank or Euro-Cheques, P.O., cash) payable to **INDUG**.

Available Issues

#7 - FEBRUARY 1988.	#8 - MARCH 1988.
#9 - APRIL 1988.	#10 - MAY 1988.
#11 - JUNE 1988.	#12 - JULY 1988.
Vol 2 Iss #1 - AUGUST 1988.	

We regret that issues 1 to 6 are now out of print.

Please **WRITE YOUR ORDER ON A SEPARATE PIECE OF PAPER**. DO NOT include letters with order. Remember your membership number or orders will be delayed.

CAT-SORT

By: James Willsher.

This is a program which sorts the disc directory into alphabetical order. It is extremely easy to use, all you do is insert your disc into drive 1 and hit the space key.

As it is written in basic the sort is a little on the slow side, in fact a full 80 files could take upto 15 minutes although this depends on just how 'out of order' they are. It is best to get on with something else while the program does its job, line 310 prints give you an idea...

Sorting is done on ascending value of the filename, on the Spectrum this means that numbers come before capital letters which come before lower case letters. See your manual for the list of code values for each character, remember the space character comes before everything. If you dont understand what I mean then try comparing strings in basic i.e. IF "TEST" < "test" THEN PRINT "TRUE". Change the content and length of the strings until you get a feel for the way things work.

The program was written for a 128k Spectrum and uses the RAM disc as temporary storage, I think it could be rewritten for the 48k but I'll leave that up to someone else.

```
10 REM DISC DIRECTORY SORT.
20 REM By James Willsher
30 REM
40 PAPER 0: INK 5: BRIGHT 1: BORDER 0: CLS
50 BEEP .05,30: BEEP .05,30: BEEP .05,30
60 REM
70 INK 5: CLEAR 39999
80 DIM A$(80,10): DIM B$(80,10)
90 INK 5: PRINT #0;" ENTER DISC THEN PRESS SPACE..."
100 PAUSE 0: CLS
110 LET D=16: LET T=0: LET S=1: LET I=3: LET J=0: LET M=40000:
LET A=0: LET MEM=40001
120 PRINT AT 0,0;"Directory is Loading-Please Wait"
130 FOR T=0 TO 3: FOR S=1 TO 10: LOAD @1,T,S,M
140 LET M=M+512
150 NEXT S: NEXT T
160 CLS : PRINT AT 5,8;"Directory Loaded"
170 PRINT AT 11,5;"Number of Headers Used";
180 INK 6: PRINT AT 14,15;"0": FOR V=1 TO 80: LET E=V-1: PRINT
AT 14,D;E
190 IF V>9 THEN LET D=15
200 FOR C=MEM TO MEM+9: LET A=A+1
210 LET K=PEEK C
220 IF K<32 THEN LET K=63
```

```

230 LET A$(V,A)=CHR$ K
240 NEXT C
250 IF A$(V)="?????????" THEN LET O=V-1: LET P=O-1: GOTO 310
260 LET A=0
270 LET MEM=MEM+256
280 NEXT V
290 LET O=V-1
300 REM
310 IF O>35 THEN PRINT AT 18,0; INVERSE 1;"NOW GO MAKE A CUP OF
TEA..."
320 DIM N(O+1): FOR C=1 TO O: LET N(C)=C: NEXT C
330 REM
350 FOR K=1 TO O: LET MEMA=40000: LET MEMB=40256: LET CHANGE=0
360 FOR L=1 TO O-1
370 LET Y=L+1
380 IF A$(L)> A$(Y) THEN SAVE !"ONE"CODE MEMA,256: SAVE !"TWO"CODE
MEMB,256: LET CHANGE=1: GOTO 400
390 GOTO 430
400 LET Z$=A$(L): LET A$(L)=A$(Y): LET A$(Y)=Z$
410 LOAD !"ONE"CODE MEMB,256: LOAD !"TWO"CODE MEMA,256
420 ERASE !"ONE": ERASE !"TWO"
430 LET MEMA=MEMA+256: LET MEMB=MEMB+256
440 NEXT L
450 IF CHANGE=0 THEN GOTO 470
460 NEXT K
470 CLS
490 PRINT AT 0,0;"Directory is Saving-Please Wait."
500 LET MEM=40000
510 FOR T=0 TO 3
520 FOR S=1 TO 10
530 SAVE @1,T,S,MEM
540 LET MEM=MEM+512
550 NEXT S: NEXT T
560 CLS : PRINT AT 5,8; FLASH 1;"Directory Saved!": PRINT AT 20
,0;"Press any key to continue..."
570 PAUSE 0
580 CAT 1: PAUSE 0
590 GOTO 610

```

As I said, the program sorts into ascending order of filename, but this could be changed by altering line 380 and maybe the coding in lines 200-240.

I would advise that once the program is typed in and saved it should be tried out on a disc that you have a back-up copy of. I would hate you to lose the contents of a disc because of a typing error.

FORMAT NEEDS YOU...

We want your programs, both large and small, for printing on these pages. Basic, Machine Code or mixed, we need them all. ALL types of program are wanted. Payment made on publication.

Send them, on cassette or disc (3.5 or 5.25) to the address on page 2, please include a listing (if you can) and full instructions.

MIDI For Beginners Part 1. An Introduction to MIDI.

By: Ray Elder.

Computers and music are becoming more and more integrated, the multitude of hits by Stock, Aitken & Waterman are predominantly produced on the common Atari ST machine using a MIDI package! So what is MIDI?

MIDI is an acronym for Musical Instrument - Digital Interface and is a standard which has been agreed upon by the music industry for communication to and from the modern chip based electronic instruments. In effect it is a fast data transfer port similar to the RS232.

The Spectrum has three interfaces available for it (to my knowledge, I would be interested to hear of any others), and you will also need an instrument with a MIDI socket, these are mostly keyboards or synthesizers, however some reasonably priced guitar controllers are now appearing on the market.

Depending on the software, MIDI will allow you to record and replay music, whole compositions, short repeated phrases, individual lines etc. or control the sound parameters or functions of an electronic instrument or set of instruments. The advantages are that music can often be manipulated in a similar fashion to text in a wordprocessor and each replay is achieved by actually playing the instrument and therefore does not suffer, as a tape system does, of signal/sound deterioration. MIDI operates up to sixteen 'CHANNELS' to which an individual or group of 'VOICES' can be assigned.

To clarify, you may record a single voice bass line and send it on replay out on channel 2, and perhaps a three voice piano chord rhythm which is assigned to channel 3. If your receiving keyboards are set to channel 1 for which a bass guitar voice is selected and channel 2 on another instrument which has a piano voice set, then both parts will be heard independently. Of course you can change the voices and play the same tune but perhaps with Cello on channel 1 and Violins on channel 2 - opportunities for massive experimentation without having to rerecord the tune each time to hear what different variations and combinations will sound like!

In the rest of this introductory article I will look at the instruments and interfaces that are suitable.

INSTRUMENTS.

Beware! There are a couple of differences in MIDI

specification which could catch you out, I spent over three hundred pounds on a keyboard with MIDI but which was almost useless for my purposes.....

There are several modes in which MIDI can operate, the most common is OMNI and this is usually available on most instruments. In OMNI mode all notes sent to the keyboard regardless of channel assignment are played. This is OK if you want to play a single voice part ie. piano music only, but useless to play anything sophisticated on, to get more of power from MIDI you need an instrument with POLY mode. Poly mode will allow you to set the channel that the instrument receives on - Channel 1 to 16 - and only the notes sent on that channel will be played. This is the minimum requirement for any real work with MIDI.

MONO mode is a rather more powerful in that it allows you to assign more than one channel and voice at the same time on the same instrument. This was prohibitively expensive at first but now is implemented on most of the latest keyboards and expanders.

KEYBOARDS

Although all instruments with keys are technically keyboards, the trend is to apply the name to those instruments which has preset voices (ie. piano, brass, strings etc.). These often have extra features such as drums, rhythms, 'easy' chords. They are very limited, often only having OMNI MIDI, and the money which is spent for the extras is largely wasted when using primarily with a MIDI set up.

I would not recommend these unless it also doubles as a home keyboard for the family or for playing as an instrument in its own right.

SYNTHESIZERS

These are different from the 'Keyboards' in that the sounds are programmable, you can change or create your own voice sounds. They do not usually have any frills but can include an on board sequencer which may or may not be useful depending on whether it is MIDI controllable.

Many Synths have MIDI computer controlled sound EDITORS available which help enormously in the creation of new and exciting sounds.

EXPANDERS

These are essentially the keyboard/synthesizer sound generation modules without the keys. Although they cannot be played except with a MIDI equipped keyboard or computer, they provide a way of accessing many more sounds at less price than buying a full keyboard.

DRUM MACHINES

Very useful and nearly all the modern ones contain a sequencer which can be controlled by MIDI, they can also play patterns which are sent by the computer.

SUGGESTIONS.

All this sounds horribly expensive, yet it need not be. I started with a Casio CZ101 (now obsolete) which was originally priced at £345. This is an excellent synth. that can operate in OMNI, POLY or MONO mode. The sounds are a little weak, but there are several libraries and editors available and it can produce some beautiful tones. In Mono mode you can use up to four independent channels each with a single, different voice. I bought one recently, new but shop soiled, for £160.

There are many expanders on the market, the favourite and ultra sophisticated at the moment is the Roland MT32 at around £320. I have a Yamaha FB01 which is superb and originally cost £399. You can find them advertised for around £250.

The FB01 will allow up to 8 independent channels/voices or combinations. For example you could have the single bass voice on channel 1 and three voices for piano on channel 2, plus four more voices to play with as you please!

It is worth getting the best instrument you can afford as a master, but an alternative would be to buy a MIDI master keyboard controller - basically the key section without the sound generator - Cheatah do a very good range from £99 for the basic unit to £399 for the top of the range all singing version.

A drum machine is very useful though not essential, depending on the sort of music you intend to play. Yamaha do a great range running from £299 for the RX21 to the RX1 at £699, again I have seen the RX21 discounted to £150. My own is a Casio RZ-1 which was originally £499 but was discounted to £250, this one also allows limited sampling, just enough for extra percussion sounds.

The publication 'MUSIC MART' is the source of all my purchases and I would recommend it to prospective buyers.

INTERFACES.

There are three that I know of for the Spectrum, and each have strengths and weaknesses, all plug into the port at the back of the Spectrum and all have a set of standard 5 pin DIN MIDI IN and OUT sockets.

The weakest is the JMS interface supplied by Rossetti, it is a sturdy, well made unit by Jellinghaus. The problem is that it is not very well supported by software, the one package that I have seen is a step time (manual note by note entry) sequencer. There are eight tracks, channel assignable but single note only. Very limited.

Next on my list is the Electromusic Research (EMR) interface. This is connected to the Spectrum by a short ribbon cable and is therefore more stable. EMR have a few programs for this interface including a CZ101 editor. Their main program is an excellent real time (records as you play) sequencer program bristling with features. If you are a competent player then this program, which acts like an eight track polyphonic tape recorder, is highly recommended.

My personal favourite is the XRI systems interface, the Micon. It is a rather cheap looking device that fits insecurely on the back of the Spectrum, the computer and interface needs to be put in a solid, secure place. Where this system scores is in the support that XRI provide in both software and advice. I have had several dealings with them and found them helpful and considerate.

XRI provide a wide range of editor programs including ones for the C2 synths, FB01 and MT32. Their Step time sequencer is superb, easy to use and to edit, and displays music in score notation. This is great for transferring from sheet music into the computer. XRI have also produced an excellent real time sequencer which allows recording of music in blocks of as many bars as you wish and which can then be manipulated as required. This is great for the less than competent player - ie. ME!

I have sent a demo tape of some of my music to FORMAT, the songs on it are part of an education tape I am creating and which is intended for the lower school music & movement classes. All the songs are related to the weather and are (hopefully) evocative of the weather of the title. I can provide the full copy of all 12 mood songs for the special bargain price of £3.99 (inc. P&P) to FORMAT readers. (just don't tell your local teacher!). Send cheque/P.O. (payable to R.Elder) to 1 Periton Court, Park House Rd, Minehead, Somerset, TA24 8AE.

See you next issue....

Addresses

JMS - Rossetti Ltd. 138-140 Old St. London EC1V 9SL.
EMR - 14 Mount Close, Wickford, Essex, SS11 8HG (0702 335747).
XRI SYSTEMS - 10 Sunnybank Rd. Wyde Green, Sutton Coldfield, W. Midlands B73 5RE (021-382 6048).

- + - + - + - + -

BACK ZONE - continued from page 14.

Now with an autorun file all you have to do is add another comma and the call address :-

SAVE d*"name" CODE start,length,call-addr

For example, say you have machine-code which loads at 40000, has a length of 6000 bytes and is called at 40700. You would type.

SAVE d*"name" CODE 40000,6000,40700

I hope that this little information has made it easier for some machine-code programmers to call routines.

That's it for this month. If you wish to contact me, then write to me c/o FORMAT and your letter will be passed on.

Thankyou for reading and see you next month.

FORMAT SOFTWARE SERVICE

FSS provides DISCiPLE and PLUS D owners with a growing range of software specially designed for their systems. Software is supplied on tape for use with any format/size of disc.

Code	Title	Program Description
T001	LCOPY	Routines to replace the GDOS printer dump routines in your system file. Enables Epson compatible printers without Esc " to be used with both SCREEN\$ 1 & 2 and SNAPSHOT prints.
T002	MULTI-POKE	Program to display and edit 48K SNAPSHOT files. Full facilities for entering published POKES i.e. Infinite Lives etc. Makes use of printer if attached.
T003	G-HACKER	A graphic investigator. Look inside commercial programs, find the Sprites and pictures. Works in 48K mode but will handle many 128K programs.
T004	I.B.U.	The highly successful 'Incremental Backup Utility', written by New Young. As featured in Issues 5,6,7 & 8 of FORMAT.
T005	TAPE-SNAP	Transfer 48k Snapshots to tape with this easy to use program. Transferred Snaps will reload and run without the disc system present.
T006	ART STUDIO	Converts the OCP ART STUDIO to full disc operation, includes printer driver.
T007	PLUS D HACKER	For PLUS D ONLY. EXAMINE memory / program registers at any point using snapshot button, DISASSEMBLE, SEARCH graphics, enter POKES, return to running program + MANY MORE. 128k and printer fully supported. Includes Graphics Animator system extensions to basic. Why waste money on extra hardware, PLUS D HACKER does it all.
T008	TASCON 128/+2	The long awaited conversion program for TASWORD 128 and TASWORD +2.

All tapes: £3.95 incl p&p or £4.95 overseas. Send order (on a separate piece of paper), clearly stating Tape Number; Title; Quantity required and your membership number. Payment in STERLING by Cheque (UK bank), P.O.s, Euro Cheques or Cash.

DO NOT ENCLOSE CORRESPONDENCE WITH ORDERS.